

XXXIV.—*On the Pinus and Abies, with remarks on a New Species.* By CAPTAIN S. E. COOK, R.N.

IN the paper which was given in a preceding Number (vol. ii. p. 163.) the general distribution of the genera through Europe was stated, as far as my observations and information at that period enabled me to do. Since that time an addition to our knowledge of this branch has been made by the ascertaining a species which was first announced by me to exist in the mountains of Ronda, the bearings of which on the positions laid down as to the pinology of Europe are too important not to require its introduction into the system. My information respecting it was too vague, except as to the locality, and that it differed from all the species in the vicinity, to enable me to do more than suppose, that, as I had found the upper parts of the Sierra de Cuenca, which bear some analogy to the mountains of Ronda, clothed with *P. sylvestris*, that it might possibly be that species; but having only conjecture to guide me, I published the notice with the view of drawing the attention of other travellers to the subject.—‘Sketches in Spain,’ vol. ii. p. 239.

It was the more mortifying to me to leave this point undetermined, owing solely to the late period which my information was obtained, because I had previously planned and actually commenced a section of the district which would have carried me quite through the centre of the forest, when the death of the horse I rode at Antequera obliged me to return to Malaga, and I had no opportunity of again undertaking it. We are indebted to M. Boissier, who is, I believe, a naturalist of Geneva, for the information that the tree in question is a new and undescribed species of the silver fir.

Great as the interest is to those engaged in the study of this subject by the discovery or observation of a new species, it is enhanced in this instance by its bearing on and connexion with the pinal vegetation of Europe; and we shall now proceed to place the *Pinsapo*\*, by which provincial name it is most properly designated, in its true position, in which it

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affords beautiful proofs of the order and harmony with which the operations of nature are found to be conducted whenever they are closely investigated.

The Serrania de Ronda is a mountainous region rising abruptly from the shores of the Atlantic and Mediterranean and from the newly raised plains of Western Andalusia, which bound it on three sides, its eastern boundary being continuous chains connecting it with the great mountainous system of the interior of the Peninsula. It thus forms the bulwark of Spain to the Atlantic, the vapours of which are arrested by its higher summits, giving the region a character of comparative humidity, and imparting to its valleys extreme fertility. The height of S. Cristobal and the Sierra de la Nieve, the most elevated summits, may be taken at six to seven thousand feet, and high upon their flanks is placed the *Pinsapo*, where it forms a zone above the *P. Pinaster*, which was stated in the last paper to occupy the lower valleys of the same district.

The resemblance of this Hesperian region to the Peloponnesus, with which it very nearly corresponds in latitude, altitude, and relative situation, both to the adjacent continent and the adjoining sea, is too striking not to require notice; and as we have seen in a preceding paper the flanks of Mount Taygetus are covered with a silver fir, we have the new and curious information that this genus forms three grand divisions, extending from the Altaian Chain through central Europe, and ending at a moderately high elevation at its southern extremities of Greece and Western Spain.

The next point to determine is the connexion of these localities with the central zone, and the demarcation or limits of the extension. There is little doubt that that of the Grecian division must be sought for in the Apennines, and if, as I believe, the genus is found to be indigenous at Camaldoli in Tuscany, it requires examination, and the attention of those who reside in or may visit the district is earnestly called to the subject. If not found there it must be sought for in the Southern Alps, and especially where a zone of beech, which is met with in the Abruzzi, points out in that latitude the silver fir as the next superior member of the forest.

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valleys of Navarre and the Western Pyrenees, and it requires close examination to ascertain whether the species which is found in those comparatively genial valleys belong not to the southern division, and if so, whether, as is possible, it be identical with that which occupies the great zone in the highest valleys of the range at the back of the Maledetta and Mont Perdu.

From the description of the localities above mentioned, it might be inferred, that the natural habitats of the silver fir are rather characterized by humidity. I have no doubt it is so, and in attentively considering its natural position in Europe, we find that in the regions where dryness of atmosphere predominates, it is replaced by its congeners the *Pinus* of the corresponding zone. This observation is of material importance as to the œconomic value of the tree, because it would point out the species as particularly suited to most parts of these islands, of which the climate seems peculiarly fitted to its cultivation on an extended scale.

That the *Pinsapo* should have remained so long unnoticed is less singular than that of many other points connected with the natural history of the same country, which have been left equally unobserved. The locality which it occupies is of small extent; and it is not only unnoticed by the Moorish writer of Arab agriculture who wrote in the twelfth century, and was well acquainted with the arboreal vegetation of Andalusia, but I believe it was unknown in the Arsenal at Cadiz, where, from the dearth of timber, it would have been invaluable, though its total destruction would have probably been the result of the discovery. The order of position of the pine in that portion of Spain, by observation of the Sierra de Macael and other ranges to the east and west of the same district, is, ascending, *P. halepensis* and *Pinea*, *P. Pinaster*, *P. Pinsapo*.

#### *On the Division of the Genus Abies.*

The division of this portion of the great family of *Pinus* appears to have been proposed in the observation that some of the members of it had the cones placed vertically on the tree, whilst in others they are pendent. Some other differences in the structure of the cone have been noticed, a recent one,

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#### *On the Pinus hispanica.*

In describing this remarkable species in the preceding paper, it ought to have been noticed that my observations were entirely made in the Sierra de Segura, in the South of Spain. This magnificent forest, which in 1804 contained 62,000,000

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of trees, was traversed by me in its greatest extent, and from it my descriptions are taken and the cones were brought which through the Horticultural Society and other channels have been circulated through England. Those which are now sold and figure under the inappropriate name of *pyrenaica* are from a forest of much less extent in Upper Aragon, at the south foot of the Pyrenees. The reason for not conferring a specific name upon the species of Segura when introduced by me was, that having previously seen the forest of Aragon I believed the species to be formed of the same pine, and having information on which I could rely that those of an extensive district in the Sierra de Cuenca was probably identical with these, and knowing that the species was confined to Spain, the appropriate name of *hispanica* was proposed, in order to prevent the multiplication of names as much as possible, and at the same time give the clearest idea of the arboreal vegetation of the country, which no one had before attempted. The tree then as introduced and described by me is the Pine of Segura; and that known in the catalogues as *P. pyrenaica* is from Aragon, which I believe and have assumed to be identical with it, but do not positively assert that it is so. The points of distinction between this species and its neighbour the *Laricio* as indicated were sufficiently numerous, but two others were omitted: the *P. Laricio* is so resinous that it was used at Toulon for masts; the *P. hispanica* is so dry in its texture as to be quite unfit for that purpose, and could only be used, even in their direful scarcity of native timber, in the arsenals of Cadiz and Carthagena for decks and similar uses which do not require elasticity, and the timber for which is quite of a different quality from that used for masts.

In my original account of the species it was stated, that the cones, after being some time shut up in a box, exhaled a delicious perfume, which quickly evaporated. Whilst writing this paper it occurred that the same quality might distinguish the buds of the species, and on rubbing them I found that the turpentine of the *Laricio* is strong and coarse in flavour, like those of the northern species, its scent remaining long on the fingers, whilst that of the *hispanica* is light, aromatic, and highly volatile. I have no doubt that a fine and peculiar bal-

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sam might be prepared from it. Owing to its dryness and to its not bleeding in consequence, the *hispanica* bears the knife better than any of the genus which have come under my observation.

There is no doubt whatever, from the reasons above stated, that for œconomic purposes the *Laricio* is the better tree, though I believe that in hardiness and quickness of growth they are about equal. The French government have, owing to its great value, caused the *Laricio* to be extensively grafted, with *P. sylvestris* (see 'Arb. Brit.'), a process of doubtful utility, certainly so in this country, where, in soil and situations suited to it, it would grow faster than the Scotch fir. As ornamental trees, both, differing totally in character, are equally desirable in the park. There is a very just observation of M. Vilmorin, that the *P. hispanica* has more resemblance to the *Pinaster* than to the *Laricio*. The trees in the Landes I believe, by tapping to extract the turpentine, have a glaucous hue, and in form are not at all unlike the *P. hispanica*; but of course the cones and other peculiarities distinguish them quite as much as from the *Laricios*, and forbid the supposition of any connexion between them.

#### On *Pinus uncinata*.

The distinction between this species and *sylvestris* is not great, but in my opinion quite sufficient not only to justify the separation, but in fact make it necessary, it being equally imperative to form good distinctions of genera and species as to reject those which are insufficient. For instance, the *rubra* and *alba*, the *rigensis* and *genevensis*, are merely varieties of *sylvestris*. The first point of distinction is in the cone, and was given by the French botanists who noticed the form of the scales; and from a peculiar hook or knob at the extremity, which is most remarkable when the cone is full formed, before it begins to dry, gave it the name of "*Pin à crochets*." It is really a good designation and has nothing to do with the general form of the cone, which is often curved or bent, as are those of *sylvestris*, *Pinaster*, and many others. Besides this form of the hooks, the cone is more rugged in texture and in form than that of its congener, and they are easily distinguished by those who have studied them in the forest, as well

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as the appearance of the foliage, which is more dark in colour, and stronger in the spiculæ, which stand out in a peculiarly rigid form like the spokes of a bottle brush, if such a comparison may be used\*. Those which were brought to this country by me were chiefly from the forests of the Spanish Pyrenees, which are still of vast extent, very few trees now existing on the French side.

I have no doubt that the *Mughus* of the catalogues is synonymous with the *uncinata*, and if the species, as there is reason to believe, occurs on Mount Cenis, it is probable that *uncinata* has been applied to the Pyrenean and *Mughus* to the Alpine tree.

*P. Pumilio* is completely distinct from either *Mughus* or *uncinata*, with both of which it has been confounded. It is described in the French books as being found in the "Marais tourbeux du Jura." I have never seen it in any part of the Jura I have visited, but from the difficulty of establishing it in hard ground it is probably the case, and I have heard that it exists in Hungary. There are two varieties, one red and the other white in the flower, both which may be seen in great beauty at Dropmore. The peculiar habit of the tree is to trail on the ground and extend itself laterally, the branches being curved upwards; the cone is small and something like that of *P. uncinata*.

In assigning the species which have come under my observation in this and in the preceding paper, the cones and fructification are the points principally attended to. I have given the characters as clearly as I could commit them to paper. There are others as to the port and bearing of the trees which can only be fairly judged by much practice and the habit of seeing the trees in their native forests and in masses, where both species and individuals are fully developed.

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